

APPENDIX C: MONITORING

I. INTRODUCTION

This appendix describes monitoring that will take place or has been taking place on the Gulkana River. The description for each monitoring item includes:

- Whether the monitoring is new or existing.
- Definition of items to be monitored, if necessary.
- Description of the indicator, if applicable.
- Description of the standard, if applicable.
- Description of the monitoring technique and how data will be summarized.
- Time frames for monitoring.

II. MONITORING ITEMS, RECREATIONAL IMPACTS

1. Site impacts

- **New or existing:** Some monitoring of sites has occurred on the Gulkana. The BLM has mapped sites along the river as a guideline for the crew in cleaning and monitoring. The contractor collected baseline information on each site (including photos, estimates of bare ground, identification of satellite sites or social trails, vegetation damage, etc) that the BLM has used to develop the monitoring described here.
- **Definitions:** A **site** is defined as any spot along the river (either gravel bar or upland) that shows some sign of repeated human use. Signs of use include vegetation damage (trampled or cut), bare ground, fire rings, and game racks. A site is generally used as a camping spot (this is where most impacts come from) but could be a day-use spot also, especially in the Sourdough segment. A spot along the river could have litter or human waste present, but not necessarily be a site if there is no sign of repeated use. A **social trail** is a trail linking primary sites with satellite sites or other features such as outhouses. A **satellite site** is a smaller site off the primary site, linked by a social trail, usually used for a tent pad. For the purposes of this monitoring, the primary site and associated satellite sites are part of the same site. **Heavy impact site** is any site that has a contiguous spot of bare ground larger than 150 square feet. **Moderate impact site** is any site with contiguous bare ground >10 square feet but <150 square feet. **Low impact sites** have less than 10 square feet bare ground.
- **Indicators:** bare ground, social trails, and satellite sites.
- **Standard:** Varies by segment but in general the standard for heavy impact sites would be no increase in bare ground on the riverbank and no increase in satellite sites or social trails; moderate impact sites would be no increase in bare ground; and light impact sites would be no increase in bare ground.
- **Description of monitoring technique:** Each site to be monitored will have a numbered pin installed. GPS position will be established off the pin. At each site a monitoring form is filled out, with site sketch, two photo points, and estimate of bare ground using a portable grid system. Bare ground monitoring will be conducted every five years to determine trend. Monitoring form also notes vegetation damage (including cut and damaged trees, exposed roots, etc).
- **Time frames for monitoring:** Baseline information will be gathered by BLM river crew in 2003/2004. Site monitoring to determine bare ground trend will occur every four years. If trend information indicates increasing bare ground, that site will immediately be subject to Phase I management actions.

2. Litter

- **New or existing:** Some informal monitoring of litter has occurred, simply by noting volume of litter collected on clean-up trips. This has not been well documented. This will be the first “formal” monitoring to occur.
- **Definition:** With enough searching, litter can be found at any site on the Gulkana at any time. The key here is amount and intent. For the purposes of our monitoring, litter will be defined as anything more than a handful. Also, if the camp was cleaned up before departure, it should be obvious. In this case, there may be a missed scrap of foil in a fire pit, or a cigarette butt. If the intent was to clean the site before departure, these small amounts of litter, less than a handful, will not count.
- **Indicator:** Percentage of sites at which litter occurs.
- **Standard:** Varies by river segment but ranges from 0 to less than 10 percent.

- **Description of monitoring technique:** BLM river crew stops and cleans every site, usually three times per season. Crew would simply tally number of sites at which litter was present, and express as a percentage. At the end of the season percentage from all trips would be averaged together to obtain a final value for the year. This value would be cross-checked with average values obtained from the Gulkana River User survey form, which is available (and voluntary) to all river users at Paxson and Sourdough boat launches. The survey poses the questions of “How many campsites did you use on the trip?” and “How many campsites had litter (more than a handful) present?” From these two questions, a percentage can be obtained.
- **Time frames for monitoring:** Monitoring will occur every year on Upper River and Sourdough segments and whenever trips are scheduled for the west fork or Middle Fork. One year of monitoring data that indicates standards are exceeded for a particular segment will initiate Phase I actions. Once Phase I actions are initiated, two consecutive years of exceeding the standards will be necessary to initiate Phase II actions.

3. Human Waste

- **New or existing:** Some informal monitoring of human waste has occurred, simply by noting relative amount per clean-up trip. This has not been well documented. This will be the first “formal” monitoring to occur.
- **Definition:** Human waste, for the purposes of this monitoring effort, is any exposed human waste or associated toilet paper. Toilet paper wadded and left in a fire pit is litter, toilet paper behind the bushes at a site is “human waste”.
- **Indicator:** Percentage of sites at which human waste occurs.
- **Standard:** Varies by river segment but ranges from 0 to less than 10 percent.
- **Description of monitoring technique:** Same as described for Litter above.
- **Time frames for monitoring:** Same as described for Litter above.

4. Fire rings

- **New or existing:** Some notation of fire rings has been made in conjunction with site monitoring.
- **Definition:** A ring of rocks used to contain a campfire. A pile of un-scattered ashes on a gravel bar (or upland site) does not constitute a fire ring.
- **Indicator:** Number of fire rings per site.
- **Standard:** Varies with river segment, from 0/site to percentage of sites with more than one fire ring.
- **Description of monitoring technique:** BLM crew visits each site on Upper River and Sourdough segments three times per year. Simply note number of fire rings per site and average values over the season.
- **Time frames for monitoring:** Monitoring will occur every year on Upper River and Sourdough segments and whenever trips are scheduled for the west fork or Middle Fork. Two years of monitoring data that indicates standards are exceeded for a particular segment will initiate Phase I actions. Once Phase I actions are initiated, two consecutive years of exceeding the standard will be necessary to initiate Phase II actions.

5. Camp encounters

- **New or existing:** Camp encounters has not been monitored in the past.
- **Definition:** A **camp encounter** is a night within sight or sound of another parties’ camp. If your party is large and split into two groups and camped at two different sites in close proximity, this is not a camp encounter, because you are one party. Seeing parties float or powerboat by on the river is not a camp encounter, unless those parties camp within sight or sound. **Camp sharing** is when you share the same site with another party, not by choice. The other party must be camping at your site, not just fishing.
- **Indicator:** Percent of nights on river within sight or sound of other campers (for camp encounters).
- **Standard:** Varies widely by segment and by season.
- **Description of monitoring technique:** BLM crew will make note of camp encounters on their clean-up trips. However, we will rely mostly on user survey forms described above. The form asks how many campsites were used, and how many campsites were within sight or sound of other groups. The annual survey information will be compiled at the end of each season and summarized by segment for camp encounters.

- **Time frames for monitoring:** Monitoring will occur every year on the Upper River and Sourdough segments via the user survey forms. On the Upper River and Sourdough segments, two years of data indicating standards being exceeded will initiate Phase I actions. Once Phase I actions are initiated, two consecutive years of exceeding the standard will be necessary to initiate Phase II actions. On the west and middle forks, three years of user survey data will be used to determine compliance with standard.

6. Powerboat and floater encounters and off-road vehicle encounters: These are not items which will be driving management actions. However, we will continue to monitor powerboat encounters with floaters and other powerboaters, floaters encounters with floaters, and off-road vehicle encounters. This will be done through the user survey forms.

III. RESOURCE MONITORING

1. Water quality: Some water quality monitoring is currently being conducted. At least two water quality monitoring points will be permanently established within the Gulkana river corridor, one above Sourdough and one in the Upper River segment. Dissolved oxygen, pH, temperature, turbidity and fecal coliform will be measured. This monitoring will provide baseline information to detect any significant changes and will be shared/compared with water quality information obtained by Gulkana village in the proximity of the Richardson Highway bridge over the Gulkana.

2. Bald eagle nests and nesting success: This monitoring has been conducted for the past twenty years and will continue. The Gulkana watershed is flown twice, once in May to detect eagle nest sites and once in July to determine nesting success and number of fledglings present. This data will be broken out by river segment to monitor trends within each river segment.

3. Fish monitoring: BLM and ADF&G cooperatively operate a fish-counting facility on the Gulkana, approximately 1.5 miles up the main stem above the west fork confluence. Purpose is to count returning Chinook and sockeye salmon. This data will eventually be used to establish a Biological Escapement Goal (BEG) to assist fisheries managers with allocation of fisheries resources within the Copper River and Gulkana watersheds. Monitoring of steelhead/rainbow trout is also occurring on the Middle Fork. Sport fish harvest, catch and effort is monitored by ADF&G via the Statewide Harvest Survey. Some creel census also occurs.